

CLAIMS:

1. A cleaning composition in a solid state comprising:
 - a gas-releasing component as a cleaning agent selected from the group consisting of carbonates, bicarbonates, perborates, percarbonates, and mixtures thereof, wherein the gas-releasing component is present in an amount from 20% to 60% by weight;
 - potassium silicate as a solubility control component to limit the solubility of the cleaning composition, wherein the potassium silicate is present in an amount from 5% to 35% by weight;
 - an alkalinity agent as a pH regulator, wherein the alkalinity agent is present in an amount from 1% to 35% by weight; and
 - a water softener to solvate metal ions in a solution of water, wherein the water softener is present in an amount from 1% to 20% by weight.
2. The composition of claim 1, wherein the water softener is selected from the group consisting of ion exchange particles and salts of weak acids.
3. The composition of claim 1, wherein the water softener is natural zeolite.
4. The composition of claim 1, wherein the water softener is present in an amount sufficient to soften household water after the composition reaches an equilibrium concentration in a vessel, and the equilibrium concentration is diluted in a cleaning appliance.
5. The composition in claim 1, wherein the gas-releasing component is sodium percarbonate.
6. The composition in claim 1, wherein the gas-releasing component is sodium bicarbonate.
7. The composition in claim 1, wherein the gas-releasing component is sodium carbonate.

8. The composition in claim 1, wherein the gas-releasing component is present in an amount sufficient to release an effective amount of gas after the composition reaches an equilibrium concentration in a vessel, and the equilibrium concentration is diluted in a cleaning appliance.

9. The composition in claim 8, wherein the effective amount of gas generated is from about 5% to about 9.5% by volume with respect to the volume of water.

10. The composition of claim 1, wherein the alkalinity agent is selected from the group consisting of an alkali hydroxide, alkali hydride, alkali oxide, alkali sesquicarbonate, alkali carbonate, alkali phosphate, alkali borate, alkali salt of mineral acid, alkali amine, alkaloid, and alkali cyanide.

11. The composition of claim 1, wherein the alkalinity agent is sodium carbonate.

12. The composition of claim 1, wherein the alkalinity agent is present in an amount sufficient to give a solution of the composition a pH greater than 7.

13. The composition of claim 1, wherein the alkalinity agent is present in an amount sufficient to give a solution of the composition a pH from about 7.8 to about 8.8.

14. The composition of claim 1, further comprising an anti-redeposition component present in an amount from about 1% to 3% by weight.

15. The composition of claim 1, wherein the cleaning composition is in a solid form having a surface area configuration designed to provide approximately constant surface area as the cleaning composition dissolves.

16. A cleaning composition in a solid state comprising:
a gas-releasing component as a cleaning agent selected which is sodium percarbonate;
a solubility control component which is potassium silicate to limit the solubility of the cleaning composition;
an alkalinity agent as a pH regulator which is an alkali carbonate; and
a zeolite water softener to solvate metal ions in a solution of water.
17. The composition of claim 16, wherein the gas-releasing component is present in an amount from 20% to 60% by weight.
18. The composition of claim 16, wherein the solubility control component is present in an amount from 5% to 35% by weight.
19. The composition of claim 16, wherein the water softener is present in an amount from 1% to 20% by weight.
20. The composition of claim 16, wherein the gas-releasing component is present in an amount from 30% to 45% by weight, wherein the solubility control component is present in an amount from 20% to 35% by weight, wherein the water softener is present in an amount from 5% to 15% by weight, and wherein the alkalinity agent is present in an amount from 20% to 35% by weight.
21. The composition of claim 16, wherein the alkalinity agent is present in an amount sufficient to give a solution of the composition a pH greater than 7.
22. The composition of claim 16, wherein the alkalinity agent is present in an amount sufficient to give a solution of the composition a pH from about 7.8 to about 8.8.

23. The composition of claim 16, further comprising an anti-redeposition component present in an amount from about 1% to 3% by weight.

24. The composition of claim 16, wherein the cleaning composition is in a solid form having a surface area configuration designed to provide approximately constant surface area as the cleaning composition dissolves.

25. A method of making the cleaning composition of claim 1 comprising the steps of:

mixing the gas releasing component, the alkalinity agent, and the water softener to form a dry mixture;

adding liquid potassium silicate while continuing to mix the dry mixture;

adding a small quantity of base, as a processing aid;

pouring the mixture into a mold; and

curing the cleaning composition.

26. The method of claim 25, wherein the small quantity of base is less than 1% by weight of the cleaning composition.

27. The method of claim 25, wherein the gas releasing component is sodium percarbonate.

28. The method of claim 25, wherein the alkalinity agent is sodium carbonate.

29. The method of claim 25, wherein the water softener is a zeolite.

30. The method of claim 25, further comprising an anti-redeposition component present in an amount from about 1% to 3% by weight of the cleaning composition.

31. The method of claim 25, wherein the gas releasing component is sodium percarbonate, the alkalinity agent is sodium carbonate, and the water softener is a zeolite.

32. The method of claim 31, wherein the gas releasing component is present in an amount of about 38% by weight of the cleaning composition, wherein the alkalinity agent is present in an amount of about 25% by weight of the cleaning composition, wherein the water softener is present in an amount of about 8% by weight of the cleaning composition.

33. The method of claim 32, further comprising an anti-redeposition component present in an amount of about 1% by weight of the cleaning composition.

34. The method of claim 25, wherein the mold is configured to form a solid cleaning composition having a surface area configuration designed to provide approximately constant surface area as the cleaning composition dissolves.